REMARKS

Claims 1-22 are all the claims pending in the application.

In paragraph 2A, the Examiner has predicted a rejection for a single means claim. Applicant has amended claims 1 and 11. It is inherent that the optical signals of the present application are transmitted over an optical fiber (see specification, the first paragraph of page 1). Nothing new has been added.

In paragraph 2B, the Examiner objected to the drawings. In response, Applicant added Fig. 3 and its description. The specification describes the compensating means in a number of places. Page 5 describes the insertion of linear losses and means for emitting lower powers, distributed Raman amplifiers and/or rare earth amplifiers. Page 9 talks again about distributed amplifiers. Page 10 talks about using either attenuators or using the increasing linear losses in the fiber when it is operated at a band outside of where it had conventionally been operated. Pages 10-12 talk about using low power or using distributed amplification. It also talks about emitting at low power in unused or lightly loaded channels using signals that are decorrelated between channels. Nothing new has been added.

In paragraph 2C, the Examiner has predicted rejections of the claims under 35 U.S.C §112, first paragraph, asserting that no means is caught or described. Applicant respectfully disagrees. As discussed in the paragraph above, the specification describes the compensating means in a number of places. The invention is simply a matter of controlling gains or attenuations, and that anyone of ordinary skill in the art would be able to do this once given the direction in the present application of the manner in which the gain should be controlled to achieve the desired results.

In paragraph 3, the Examiner has identified the application as containing claims directed to the following distinct species:

Species I) band extends beyond 1620 nm, including claims 1-22;

Species II) compensates depletion in channels over the beginning of the band, including claims 1-6, 11-18, 21, and 22; and

Species III) compensates depletion in channels over the end of the band, including claims 1-4, 7-13, and 19-22.

In response to the Examiner's Election of Species Requirement, Applicant elects Species I, claims 1-22 for examination. This election is made without traverse.

In paragraph 4, the Examiner has predicted prior art rejections, citing USP 5,386,314 to Jopson, col. 1, lines 39-45; USP 6,275,313 to Denkin et al, col. 1, lines 39-41; USP 6,088,152 to Berger; and Kani, "Bidirectional Transmission to Suppress Interwavelength-Band Nonlinear Interactions in Ultrawide-Band WDM transmission Systems". Applicant respectfully disagrees.

According to the present application, the Raman effect causes depletion in the channels at the beginning of the band, and enrichment of the channels towards the end of the band, and the recited compensating means compensates energy transfers between channels caused by the Raman effect.

However, Jopson provides a polarization-insensitive optical four-photon mixer with orthogonally-polarized pump signal. The part of Jopson referred to by the Examiner talks about using frequency conversion to compensate for stimulated Raman scattering in multi-channel systems by global inversion of the channel signal frequencies. Jopson does not teach or suggest compensating energy transfers between channels caused by the Raman effect.

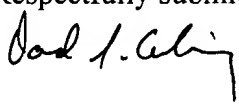
According to Denkin, the spectral distortion introduced by stimulated Raman scattering in an optical fiber transmission system has been determined to always be linear on a dB/nm scale and depends solely on the total input power. Denkin does not teach or suggest compensating energy transfers between channels caused by the Raman effect either.

Berger relates to a band of 1530-1565 nm (see figures 1 and 5 of Berger), while "Species 1" relate to a band extending beyond 1620nm. Thus, Berger fails to teach or suggest claims of the present application.

Kani pointed out that the interwavelength-band non-linear interactions of Simulated Raman scattering can impair the transmission of performance of ultravide-band WDM transmission systems, but contributed the reason to pump depletion. Kani does not teach or suggest compensating energy transfers between channels caused by the Raman Effect.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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